Remarks/Arguments

Examiner D. Nguyen is thanked for the thorough Search and Examination of the Subject Application for Patent.

The Specification has been amended to replace the incorrect serial number, 08/239575, with the correct serial number 08/239,375 thereby correcting a typographical error.

The Claims have not been amended.

Reconsideration of the objection to the disclosure is requested. The specification has been amended to correct the Patent Application serial number of the parent application for the subject Application for Patent, as required by the Examiner.

Reconsideration of the Rejection of Claims 1-3 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-3 of U.S. Pat. No. 6,249,051 B1 is requested. Claims 1-3 are significantly different from Claims 1-3 of U.S. Pat. No. 6,249,051 B1 for the following reasons. Claims 1-3 of U.S. Pat. No. 6,249,051 B1 describe a bonded structure, comprising "a plurality of physical and electrical connections between said integrated circuit element input/output pads and said substrate input/output pads wherein each said connection includes a soldering metal and a composite bump comprised of a single polymer body with a

conductive metal coating covering said polymer body wherein said physical and electrical connections are formed by said soldering metal." It is a significant limitation of Claims 1-3 of U.S. Pat. No. 6,249,051 B1 that soldering metal is required for the physical and electrical connections. In Claims 1-3 of U.S. Pat. No. 6,249,051 B1 the soldering metal is a key part of the structure.

Claims 1-3 of the Subject Patent Application describe a bonded structure, comprising "a plurality of physical and electrical connections between said integrated circuit element input/output pads and said substrate input/output pads wherein each said connection includes a composite bump comprised of a polymer body and a conductive metal coating covering said polymer body, and wherein said composite bump is deformed when said connection is formed." Soldering metal is neither described nor required in the bonded structure of Claims 1-3 of the Subject Patent Application . In the bonded structure of Claims 1-3 of the Subject Patent Application no soldering metal is used.

It is believed that the bonded structure of Claims 1-3 of the Subject Patent Application having deformed composite bumps and no soldering metal is patentably distinct from the bonded structure of Claims 1-3 of U.S. Pat. No. 6,249,051 B1 which requires soldering metal and does not require deformed composite bumps. Reconsideration of the Rejection of Claims 1-3 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-3 of U.S. Pat. No. 6,249,051 B1 is requested.

Reconsideration of the Rejection of Claims 4-5 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1and 7 of U.S. Pat. No. 5,431,328 is requested. Claims 4-5 are significantly different from Claims 1 and 7 of U.S. Pat. No. 5,431, 328 for the following reasons. Claims 1 and 7 of U.S. Pat. No. 5,431, 328 describe a method of forming a bonded structure and have the key limitations of "providing a soldering metal; heating said soldering metal to a temperature of about 30° C. above the melting point of said soldering metal; and cooling said soldering metal below the melting point of said soldering metal." Claim 1 has the limitation of "bringing together said composite bumps formed on said integrated circuit element input/output pads, said substrate input/output pads, and said soldering metal". Claim 7 has the limitation of "bringing together said composite bumps formed on said substrate input/output pads, said integrated circuit element input/output pads, and said soldering metal". It is a significant limitation of Claims 1 and 7 of U.S. Pat. No. 5,431,328 that soldering metal is required for the physical and electrical connections. In Claims 1 and 7 of U.S. Pat. No. 5,431,328 the bonded structure requires soldering metal and deformed composite bumps are not required.

Claims 4-5 of the Subject Patent Application describe a bonded structure, comprising "a plurality of physical and electrical connections between said integrated circuit element input/output pads and said substrate input/output pads wherein each said connection includes a composite bump comprised of a polymer body and a conductive metal coating covering said polymer body, and wherein said composite bump is

deformed when said connection is formed." Soldering metal is neither described nor required in the bonded structure of Claims 4-5 of the Subject Patent Application . In Claims 4-5 of the Subject Patent Application the bonded structure has deformed composite bumps and no soldering metal.

It is believed that forming the bonded structure of Claims 4-5 of the Subject Patent Application without the soldering metal and with deformed composite bumps makes Claims 4-5 patentably distinct from Claims 1 and 7 of U.S. Pat. No. 5,431,328 which requires soldering metal and does not require deformed composite bumps. Reconsideration of the Rejection of Claims 1-3 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1 and 7 of U.S. Pat. No. 5,431,328 is requested.

Reconsideration of the Rejection of Claims 1 and 4-6 under 35 U.S.C. 103(a) as being unpatentable over Hatada (U.S. Pat. No. 4,749,120) in view of Abe (JP 05335316) and further in view of R. E. Brown et al. (U.S. Pat. No. 3,809,625) is requested. Claims 1 and 4-6 describe a bonded structure, comprising "a plurality of physical and electrical connections between said integrated circuit element input/output pads and said substrate input/output pads wherein each said connection includes a composite bump comprised of a polymer body and a conductive metal coating covering said polymer body, and wherein said composite bump is deformed when said connection is formed." Claim 4 adds the limitation that "said composite bumps are formed on said integrated circuit element input/output pads prior to formation of said connection."

Claim 5 adds the limitation that "said composite bumps are formed on said substrate input/output pads prior to formation of said connection.' Claim 6 adds the limitation that "said composite bumps are formed on both said integrated circuit element input/output pads and substrate input/output pads prior to formation of said connection.

Hatada describes a structure in which metal bumps of a semiconductor device are connected to a wiring pattern of a wiring board; see the Abstract, Column 2 line 37 to Column 3 line 7, and Figs. 1A-3B. There is no polymer body in the metal bumps described by Hatada. Claims 1 and 4-6 are different from Hatada because Claims 1 and 4-6 describe composite bumps "comprised of a polymer body and a conductive metal coating covering said polymer body". Hatada describes solid metal bumps with no polymer body and does not describe composite bumps "comprised of a polymer body and a conductive metal coating covering said polymer body".

Abe describes "a bump electrode 6 composed of conductive polymer" which is "provided on the base plating layer 5 by electrolytic oxidative polymerization", see CONSTITUTION and Figs. 1-3B. The conductive polymer described by Abe is different from the polymer body of Claims 1 and 4-6 because the polymer body of Claims 1 and 4-6 does not need to be a conductive polymer. In Claims 1 and 4-6 the function of conductivity is supplied by "a conductive metal coating covering said polymer body". Abe does not describe a conductive metal coating covering a polymer body. Abe does not make the composite bumps "comprised of a polymer body and a

conductive metal coating covering said polymer body" described by Claims 1 and 4-6 an obvious extension of Hatada.

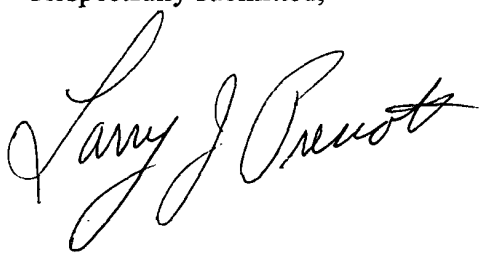
R. E. Brown et al. describe a method of making contact bumps on flip chips. Brown et al. describe a solid metal bump of a first metal, usually silver, covered by a second metal, usually gold, see column 3, line 70 to column 4, line 70 and Figs. 1-7. The bumps described by Brown et al. are formed by electroplating the bumps and have no polymer body. Brown et al. do not describe composite bumps "comprised of a polymer body and a conductive metal coating covering said polymer body". R. E. Brown et al. do not make the composite bumps "comprised of a polymer body and a conductive metal coating covering said polymer body " described by Claims 1 and 4-6 an obvious extension of Hatada in view of Abe.

It is believed that the composite bumps "comprised of a polymer body and a conductive metal coating covering said polymer body" described by Claims 1 and 4-6 are different from, not obvious from, and patentably distinct from Hatada in view of Abe and further in view of R. E. Brown et al. Reconsideration of the Rejection of Claims 1 and 4-6 under 35 U.S.C. 103(a) as being unpatentable over Hatada in view of Abe and further in view of R. E. Brown et al. is requested.

It is believed that the Claims differ patentably from the references. Allowance of the Claims is requested.

It is requested that should Examiner Nguyen not find that the Claims are now Allowable that the Examiner call the undersigned Agent at (845)-462-5363 to overcome any problems preventing allowance.

Respectfully submitted,



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